

objected to by the Draftsperson as informal but the Office Action did not expressly require submission of revised drawings or the submission of formal drawings. Applicants will submit formal drawings once a final resolution in this case is achieved.

The disclosure stands objected to because the specification contains a hyperlink on page 2 at line 12. The Office Action recommended the removal of the "www" and the word replacement of "World Wide Web." This replacement has been made.

With respect to currently pending Claims 1-19, Claims 1-2, 8-11, 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Derby et al. U.S. Patent No. 5,426,637 ("Derby '637"). Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Derby '637 in view of Harper et al. (International Publication No. WO 92/12587 dated July 23, 1992). Claims 4-7, 12-14, and 17-19 stand rejected under 35 U.S.C. § 112.

I. APPLICANT'S PRESENTLY CLAIMED INVENTION

Applicants' presently claimed invention relates to the transmission of packets in a point to point communication link. As Applicants explain, connection oriented point-to-point communication links, such as a Layer 2 Tunneling Protocol (L2TP) tunnel, are an increasingly common feature of network infrastructures. Tunnels are prearranged connections established by agreement between internet service providers (ISPs). *See Request for Comment (RFC) 2661 and Layer Two Tunneling Protocol (L2TP)*, A. Valencia, et al., draft-ietf-pppext-12p-16.text, June 1999. Figure 1 shows an architecture 10 that illustrates two L2TP tunnels 56 and 66 established through a public IP network 70. Each L2TP tunnel is a prearranged point to point link between remote client 20 and server 80. (Specification p. 2, lines 7 – 15).

As Applicants describe with reference to Figure 1, when remote client 20 establishes a dial-up connection 22 or 24 with a tunnel initiator (TI) 30 or 40, then the TI typically recognizes

client 20 as a tunnel client by means of an authentication protocol, such as RADIUS. Typically, each TI has a table that indicates the endpoint for the tunnel connection for client 20. The table in each TI typically includes a list of tunnel endpoints (TEs), such as 50 and 60 for each remote client and each TI selects an endpoint from the list independent of the selection made by another TI. Similarly, TI 40 will have a table that indicates a list of endpoints for client 20. When client 20 connects to TI 30 or 40, then each TI will independently select a TE device. As a result, there is a high likelihood that the tunnel connections 56 and 66 will terminate on different tunnel endpoints, as is shown in Figure 1. Therefore, Applicants' have recognized a need for a method for terminating tunnels initiated on multiple tunnel initiators on a common tunnel endpoint. (Specification, p. 3 lines 5 – 17) (emphasis added). Applicants' presently claimed invention provides a solution to this need.

For example, Applicants presently claimed invention is generally directed to a method for determining a tunnel endpoint for multiple links through a network for a client device. The method requires, *inter alia*, the step of "receiving a connection request from a client" and the step of "querying a database for a database entry matching the client using predetermined identifying information, where the matching database entry will include an identifier for a tunnel endpoint." (See Independent Claim 1) (emphasis added). Independent claims 10 and 17 contain similar language.

II. CLAIM REJECTIONS UNDER 35 U.S.C. §103(a)

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify the reference or combine reference teachings, and this teaching or suggestion to make the claimed combination must be found in the cited references, not in

Applicant's disclosure. In addition, the cited reference or combined references must teach or suggest all the claim limitations. (MPEP §2143).

A. Claims 1-2, 8-11, 15 and 16

Claims 1-2, 8-11, 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Derby '637. Independent Claims 1 and 10 have been amended to clarify that Applicants' presently claimed invention is directed to determining a tunnel endpoint in a communications system. Applicants respectively submit that Derby '637 does not render Applicants' presently claimed invention obvious.

For example, Independent Claim 1 recites the step of receiving a connection request from a client, and in response to this request, "querying a database for a database entry matching the client using predetermined identifying information, where the matching database entry will include an identifier of a tunnel endpoint." Then, a connection for the client is established "to the tunnel endpoint identified in the database reply." If no database reply is received, a connection for the client is established "to a locally determined tunnel endpoint." Claim 10 contains similar language.

In contrast to Applicants' presently claimed invention, Derby '637 does not teach or suggest such a method for determining a tunnel endpoint. Rather, Derby '637 is silent as to teaching a method or apparatus for establishing or locating a tunnel endpoint.

For example, Derby '637 merely appears to describe a system for interconnecting widely separated local area networks (LANs) by means of wide area network (WAN) utilizing network level facilities to establish a connection through the WAN. Derby '637 describes that requests for connections from source LAN are analyzed at the source access node to the WAN, using resources at the OSI network layer to determine the location and the medium access control

(MAC) protocol of the destination LAN. (Derby '637 Col. 2, lines 41 – 67). Derby '637 is simply completely silent as to teaching a method or apparatus for establishing and/or locating a tunnel endpoint. Indeed, Derby '637 is not directed to the establishment of any tunnel: such as a prearranged connection established by agreement between Internet service providers. (Specification, p. 2, lines 8 – 9).

It is submitted, therefore that Independent Claim 1 is in a condition for allowance and early notice to this effect is earnestly solicited.

B. Claim 3

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Derby '637 in view of Harper. Applicants respectfully submit that neither Derby '637 nor Harper teach or suggest the present invention. As explained above, Derby '637 does not teach the establishment of any tunnel and, therefore fails to teach “querying a database for a database entry matching the client using predetermined identifying information, where the matching database entry will include an identifier of a tunnel endpoint.” (Claim 1). Independent Claims 10 and 17 contain similar language. Similarly, Harper fails to teach querying a database for a database entry. By contrast, Harper is directed to establishing a tunnel by transmitting greeting messages to locate potential endpoints. (Harper, p. 5). Consequently, neither Derby '637 nor Harper, separately or in combination, teach or suggest the present invention.

III. CLAIM REJECTIONS UNDER 35 U.S.C. §112

A. Claims 4-7

Claims 4-7 stand objected to as being dependent upon a rejected base claim (Claim 1), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims as well as resolving the cited Section 112, paragraph 2

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issues. However, Applicants respectively point out that these claim terms are fully supported by the specification as filed. Therefore, Applicants respectively traverse the objections and request favorable reconsideration. (See e.g., Specification p. 8 lines 7-21 “multicast message”; p. 10 line 3 “predetermined time-out”; p. 13 line 6 “time-out”).

B. Claims 12-14

Claims 12-14 stand objected to because “the limitation ‘multicast message’ with ‘having a predetermined message type’ was not found in the documents of record, since, claims 13 depends upon 12 it would be allowable.” (December 31, 2002 Office Action, p. 2). However, Applicants respectively submit that these claim terms are fully supported by the specification as filed. Therefore, Applicants respectively traverse the objections and request favorable reconsideration. (See e.g., Specification p. 7 lines 5 “multicast message” and “predetermined message type”).

C. Claims 17-19

With respect to claims 17-19, the Office Action states that these claims stand rejected “as being so broad that the metes and bounds of the claims cannot be assessed.” (December 31, 2002 Office Action, p. 2). Applicants have re-written Independent Claim 17 to clarify Applicants’ present claimed invention. For example, Independent Claim 17 now expressly recites “a database device ... configured to ... search for a database entry [that] ... includes an tunnel endpoint address field.” This amendment is fully supported by the specification as filed and no new matter has been added. Applicants respectively request withdrawal of this claim objection.

IV. SUMMARY

It is submitted, therefore, that all pending claims 1-19 are in a condition for allowance and early notice to this effect is earnestly solicited. Independent Claims 1, 10, and 17 are



allowable for the reasons stated above. The remaining pending claims 2-9, 11-16, and 18-19 are dependent on the allowable independent claims and are therefore allowable for at least the reasons discussed with regard to the independent claims.

If for any reason, the patent application is not considered to be in condition for allowance and an interview would be helpful to resolve any remaining issues, the Examiner is requested to contact the undersigned at (312) 913-0001.

Respectfully submitted,

McDonnell Boehnen Hulbert & Berghoff

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4/15/03

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APPENDIX

Marked up version of the specification where addition are shown by underlining and deletions are shown by square brackets

Paragraph beginning on page 2, line 7:

Connection oriented point-to-point communication links, such as a Layer 2 Tunneling Protocol (L2TP) tunnel, are an increasingly common feature of network infrastructures. Tunnels are prearranged connections established by agreement between internet service providers (ISPs). *See Request for Comment (RFC) 2661 and Layer Two Tunneling Protocol (L2TP)*, A. Valencia, et al., draft-ietf-pppext-12p-16.text, June 1999, herein incorporated by reference, available from the Internet Engineering Task Force (IETF) at [www.ietf.org] [World Wide Web.ietf.org](http://WorldWideWeb.ietf.org) for more information. FIG. 1 shows an architecture 10 that illustrates two L2TP tunnels 56 and 66 established through a public IP network 70. Each L2TP tunnel is a prearranged point to point link between remote client 20 and server 80.

Marked up version of the claims where addition are shown by underlining and deletions are shown by square brackets

1. (Amended) A method for determining a[n] tunnel endpoint in a communications system, the method comprising the steps of:

receiving a connection request from a client;

responsive to the connection request, querying a database for a database entry matching the client using predetermined identifying information, where the matching database entry will include an identifier of a[n] tunnel endpoint;

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responsive to receiving a database reply including the identifier for the tunnel endpoint,
establishing a connection for the client to the tunnel endpoint identified in the database reply; and

responsive to not receiving a database reply;

establishing a connection for the client to a locally determined tunnel endpoint,
and

updating the database to include a database entry that includes the predetermined
identifying information for the client and an identifier for the locally determined tunnel endpoint.

10. (Amended) A network communication system, the system comprising:

a database device configured to store data entry, where the data entry is keyed by
predetermined client identifying information and includes a[n] tunnel endpoint identifier field,
the database device being further configured to receive a database query that includes a client
identifying information value, search for a matching data entry that matches the client identifying
information value and, if the matching data entry is found, send a database reply that includes the
value of the tunnel endpoint identifier field of the matching data entry;

an initiator network device for receiving a call request from a client and, responsive
thereto, generate a database query having the client identifying information value for the client
from which the call request is received, and where the initiator network device is further
configured, when a database reply corresponding to the database query for the calling client is
received, to establish a connection to an endpoint network device corresponding to the tunnel
endpoint identifier value included in the database reply and,

when no database reply corresponding to the database query for the calling client is
received, the initiator network device is configured to locally select a locally determined tunnel

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endpoint value and establish a connection for the client to a local network device corresponding to the locally determined tunnel endpoint value.

17. (Amended) A network system for transmitting and receiving packets across a network, the network device comprising:

a database device coupled to the network and configured to receive a first predetermined type of message having a client identifier field and, responsive thereto, search for a database entry having a key field with a value matching a value of the client identifier field, where the database entry includes a[n] tunnel endpoint address field and, when a corresponding database entry is found, generate a second predetermined type of message having the client identifier field that includes the value of the key field of the database entry and a[n] tunnel endpoint field that includes a value of the tunnel endpoint address field of the database entry, and where the database device is configured to receive a third predetermined type of message having the client identifier field and the tunnel endpoint address field of the database entry and, responsive thereto, store a database entry corresponding to a value in the client identifier field of the third predetermined type of message and having a value of the tunnel endpoint field of the third predetermined type of message in the endpoint address field of the database entry;

a first network device coupled to the network and configured to receive a first call request from a client device and, responsive thereto, locally select a second network device coupled to the network and establish a first connection for the client device from the first network device to the second network device, where the first network device is also configured to generate the third predetermined type of message having a value corresponding to the client device in the client identifier field and an address value corresponding to the second network device in the tunnel

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endpoint field; and

a third network device coupled to the network and configured to receive a second call request from the client device and, responsive thereto, generate the first predetermined type of message having the value corresponding to the client device in the client identifier field, and where the third network device is also configured to wait for a predetermined time period to receive the second predetermined type of message having a value of the client identifier field corresponding to the client device and, using the value of the tunnel endpoint field of the second predetermined type of message, establish a second connection to the second network device.

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